Canon Paleo Curriculum
Lesson Plan 1
Unit: 2

The lesson is from educational material provided by Dendrochronology Tree Ring Dating Kit, Lab Aids, inc.,17 Colt Court, Ron Kon Koma, NY 11779, Lab-Aids inc., 1996

LAB-AIDS #52 DENDROCHRONOLOGY-TREE RING DATING KIT

Student Worksheet and Guide
Dendrochronology or tree ring dating is an absolute dating technique using the growth rings of trees to deter- mine the average age of a stand of trees. It is used to determine the age of wooden objects and wooden components of buildings at archaeological sites. A specific date for each growth ring can be assigned based on a characteristic pattern produced by alternating wet and dry years.

Forestry workers use an instrument called an increment borer to obtain core samples from trees in a particular area. The increment borer is twisted 1/2 the diameter through the tree and then removed. This produces a core sample approximately 1/8 inch in diameter. The hole produced is then plugged in order to prevent infection in the tree. By counting the number of xylem rings in this tree and other trees in a given area, the average age of a stand of trees is determined. Wet and dry years can be identified by examining the individual rings (the spaces between the dark lines). Thicker rings indicate wetter years and thinner rings indicate dryer years.

Archaeologists often use tree rings to help determine the age of a particular ruin. A piece of a wooden structure is obtained and the xylem pattern is compared with a master chart dating back several hundred and even several thousands of years. The age of the dwelling can be accurately dated by comparing it to this chart. In some cases tree ring dating is more accurate than carbon-dating.

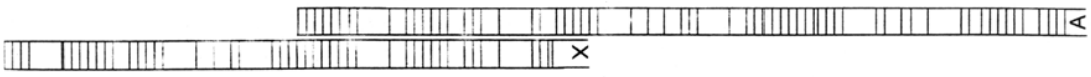
This lab activity will give you a basic knowledge of the principle of tree ring dating by using simulated core samples-one from tree (A) and one from a Forest Ranger's cabin (X).

MATERIALS:
I simulated tree core sample from a tree marked A
I simulated tree core sample from a forest ranger's cabin marked X

PROCEDURE:
PART I

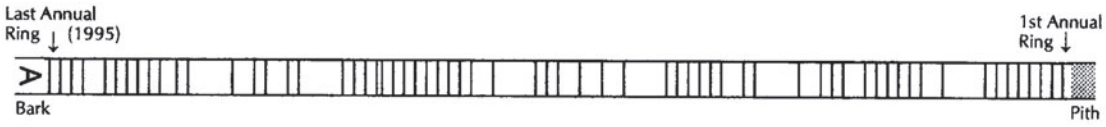
Using core sample **A,** compare to the following diagram.

1. Core A is a copy of a core sample taken from a tree in 1995. Find the age of the tree by counting all the annual rings. Remember, each space between two grooves is one annual ring and represents one year of growth. *Don't count the pith or the bark as these are not annual rings.* How old was the tree when it was cut down?



2. If the last annual ring represents the growth of the tree during 1995, what year is represented by the first annual ring?

3. In what year were you born? How old was the tree in this year?
Remembering that wide rings represent wet years and narrow rings dry years, was your birth year a wet or dry year?



4. Was 1950 a wet or dry year?

1. Core sample X was taken from a log from the roof of a forest ranger's cabin. Count the number of annual rings on this sample to determine the age of this tree when it was cut down. How old was the tree?

2. What year did the tree, from which core sample X was taken, start its growth?

3. The forest ranger's cabin was built the same year that the tree was cut down. What year was that?

4. Was the cabin built during a wet **year or** a **dry year? How do you** know?

5. The forest ranger's who lived in this cabin died in 1960. How many years did he live in the cabin before he died?

Optional Activities

Obtain a cross-section form a tree which has been recently cut down, such as a Christmas tree. By counting the rings you should be able to answer the following questions:

1. How old was the tree when it was cut down?

2. What year did the tree begin growing?

If the cross-section is large enough and old enough, use colored straight pins to mark the annual rings that correspond to important dates in your past such as:

1. The year you were born.

2. The birth years of your parents and or brothers and sisters.

3. The year you started school.

4. The year your school was built.

Teacher Key

1. How old was the tree when it was cut down? *64 years*

2. If the last annual ring represents the growth of the tree during 1995, what year is represented by the first annual ring? *1931*

3. In what year were you born? *Answers will vary* How old was the tree in this year? *Answers will vary* Remembering that wide rings represent wet years and narrow rings dry years, was your birth year a wet or dry year? *Answers will vary*

4. Was 1950 a wet or dry year? *wet*

1. Core sample X was taken from a log from the roof of a forest ranger's cabin. Count the number of annual rings on this sample to determine the age of this tree when it was cut down. How old was the tree? *66*

2. What year did the tree, from which core sample X was taken, start its growth? *1888*

3. The forest ranger's cabin was built the same year that the tree was cut down. What year was that? *1954*

4. Was the cabin built during a wet **year or** a **dry year?** *dry* **How do you** know?*I shows a narrow annual ring*

5. The forest ranger's who lived in this cabin died in 1960. How many years did he live in the cabin before he died? *6 years*